MARS in the Classroom

By Dr. Ken Stuker

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Purpose of this Session

‣ CRT data available
‣ Curriculum, instruction, & student achievement
‣ Data analysis methods and techniques
‣ Applications of CRT results
‣ Released items

Criterion Reference Test

▸ *The CRT measures an individual's performance against a specific set of criteria (Montana standards & benchmarks) for the purpose of improvement in curriculum, instruction, and student achievement.*

CRT Performance Level Descriptors and Scaled Score Ranges

Grade 3

Performance Level	Reading	Mathematics
Advanced	287–300	290–300
Proficient	250–286	250–289
Nearing Proficiency	225–249	225–249
Novice	200–224	200–224

Grade 5

Performance Level	Reading	Mathematics
Advanced	287–300	289–300
Proficient	250–286	250–288
Nearing Proficiency	225–249	225–249
Novice	200–224	200–224

Grade 7

Performance Level	Reading	Mathematics
Advanced	288–300	289–300
Proficient	250–287	250–288
Nearing Proficiency	225–249	225–249
Novice	200–224	200–224

Grade 8

Performance Level	Reading	Mathematics
Advanced	289–300	283–300
Proficient	250–288	250–282
Nearing Proficiency	225–249	225–249
Novice	200–224	200–224

CRT Data Available

- All students in the state
- All students in the district
- All students in each grade
- Groups of students
- Individual students

District, Class, & Group

- Percent Proficient
  - Reading
  - Math
  - Science
- Montana Standards
  - Highest & lowest scoring standards
- Specific questions/items
  - Highest & lowest scoring
  - Multiple Choice and Open Response

Individual Student Results

- Montana standards
- Specific questions
- Multiple Choice & Open Response
- Analyze results for individual students
  - Strong skills
  - Challenging skills

Curriculum & Instruction

- Analyze CRT results each year
- Track results from year to year
- Identify specific standards/areas for focus
- Analyze items for student strengths/challenges
- Determine specific skills

Analyze CRT Results 2008

| Standard Content Reading		Grades					
		3	4	5	6	7	8
Standard 1	Students construct meaning as they comprehend, interpret, and respond to what they read.	80.2%	76.2%	73.7%	79.7%	71.9%	82.0%
Standard 2	Students apply a range of skills and strategies to read.	79.1%	71.0%	71.0%	72.7%	71.1%	76.8%
Standard 4	Students select, read, and respond to print and non-print material for a variety of purposes.	66.9%	65.8%	65.9%	69.1%	66.0%	78.3%
Standard 5	Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.	68.2%	63.0%	56.3%	68.6%	64.5%	73.3%

Tracking Year to Year

Standard Content Reading		Grade 4				
		2004	2005	2006	2007	2008
Standard 1	Students construct meaning as they comprehend, interpret, and respond to what they read.	65%	71%	75%	72%	71.2%
Standard 2	Students apply a range of skills and strategies to read.	64%	78%	74%	72%	70.3%
Standard 4	Students select, read, and respond to print and non-print material for a variety of purposes.	55%	60%	71%	59%	60.9%
Standard 5	Students gather, analyze, synthesize, and evaluate information from a variety of sources, and communicate their findings in ways appropriate for their purposes and audiences.	57%	62%	73%	64%	67.4%

Identify Standards for Focus

District CRT Test Results Compared to the Montana Reading & Math Standards				
Grade	Highest Reading Standard 2008	Lowest Reading Standard 2008	Highest Math Standard 2008	Lowest Math Standard 2008
3	1	4	3	4
4	5	4	6	4
5	1	5	5	2
6	1	5	3	2
7	1	5	3	4
8	1	5	3	7
All Grades	1	5	3	2 & 4

Analyze Specific Items

Released Item	Standard	Correct (%)	A (%)	B (%)	C (%)	D (%)	IR	Correct Response
46	4	17	44	28	17	11	0	C
12	2	22	78	0	22	0	0	C
63	2	22	17	22	11	50	0	B
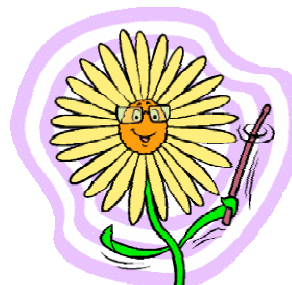
Analyze Specific Items

12. Clarissa shaded the squares below to show fractions.
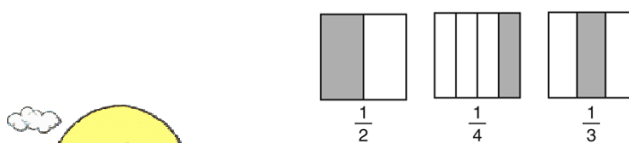
$\frac{1}{2}$　　$\frac{1}{4}$　　$\frac{1}{3}$

Which list of fractions is in order from **least** to **greatest**?

A. $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$

B. $\frac{1}{3}, \frac{1}{2}, \frac{1}{4}$

C. $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}$
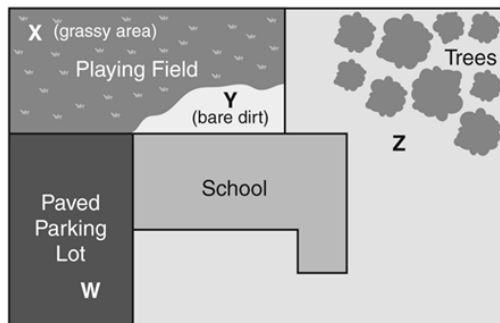
D. $\frac{1}{2}, \frac{1}{4}, \frac{1}{3}$

Specific Skills

‣ Understanding
  ◦ Fractions
  ◦ Denominators
  ◦ Vocabulary – least & greatest
  ◦ Visual aide
  ◦ Others?

Science Fourth Grade

Released Item	Standard	Correct (%)	A (%)	B (%)	C (%)	D (%)	IR	Correct Response
31	4	11	0	11	11	78	0	C
25	5	22	6	22	61	11	0	B
36	4	22	6	22	50	22	0	D

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31. The picture below shows the areas around a school.

Which location will have the most erosion?

A. location W

B. location X

C. location Y

D. location Z

Sixth Grade Reading

Released Item	Standard	Correct (%)	A (%)	B (%)	C (%)	D (%)	IR	Correct Response
36	2	27	27	14	32	27	0	D
77	2	27	36	14	23	27	0	D
56	2	32	32	32	27	9	0	A

77. How would Star Boy **most likely** describe Morning Girl?

    A. careless

    B. friendly

    C. cheerful

    D. interfering

Open Response Questions

Released Item	Standard	Point Value	Average Score
23	2	1	0.3
24	2	1	0.7
25	2	4	2.2
48	2	1	0.3
72	7	4	1.7

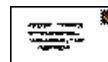## Analyze Specific Items

48. Divide:

$$5224 \div 8 =$$

Short Answer Items

- No rubric for short answer (1 point)
- All or nothing
- Why did only 3 of 10 students answer correctly?
- Have your students answer the question

Open Response Questions

- Four point Open Response items
  ◦ Multiple steps
- Released Items
- Scoring Rubric
- Model Answers
- Use in Class

Analyze Specific Items

You may use a calculator during this session.

Write your answer in the space provided for it in your Student Response Booklet. Show all of your work.

73. Luis fills a box with books that each have the same weight. The total weight, w, in pounds, of the box filled with b books is shown by the equation below.

$$w = 6b + 2$$

  a. What is the total weight, in pounds, of a box filled with 4 of the same books? Show or explain how you found your answer.

  b. On the grid in your Student Response Booklet, graph the equation for boxes filled with 2, 4, 6, 8, and 10 of these books. Be sure to label each axis.

  c. The maximum weight of a box that Luis can carry is 50 pounds. What is the greatest number of these books that Luis can put into a box and still be able to carry it? Show or explain how you found your answer.

Analyze Specific Items

Scoring Notes

Part a: 2 points   for the correct answer, **26** (pounds), and work showing appropriate strategy
OR
    1 point   for finding the correct answer, no work given or explained
or
for showing or explaining a correct strategy

Part b: 2 points   for a correct graph with labels and appropriate scale
OR
    1 point   for graphing the equation with no more than 2 errors

Part c: 2 points   for the correct answer, **8**, and work showing appropriate strategy
OR
    1 point   for finding the correct answer, no work given or explained
or
for showing or explaining a correct strategy

# Curriculum & Instruction

- Summary
  - Specific skills
  - Areas for emphasis
  - Alignment of curriculum
  - Low scoring items
    - When are they taught?
    - Are they in the curriculum?
    - Have we taught them?

Student Acheivement

- All students
- Class/grade
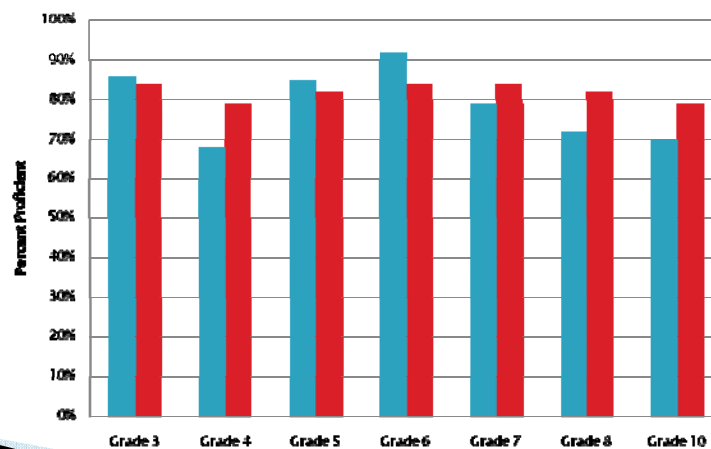- Group
- Individual
- Examples

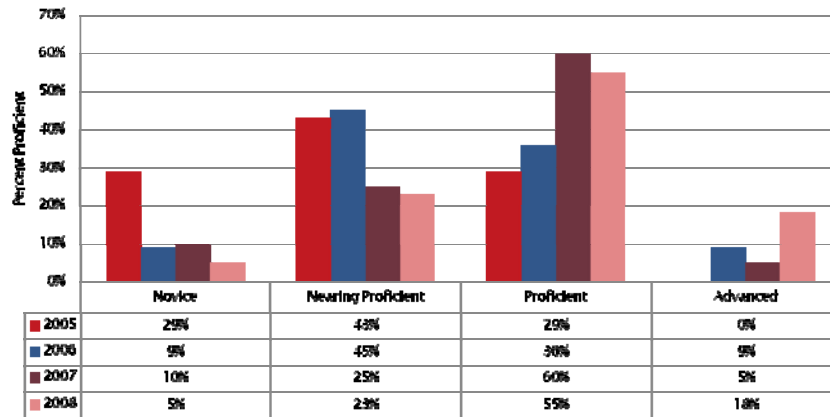# Track Overall Results

Math – Proficiency of all Students Tested

	2004	2005	2006	2007	2008
Percent	52%	47%	67%	61%	71%
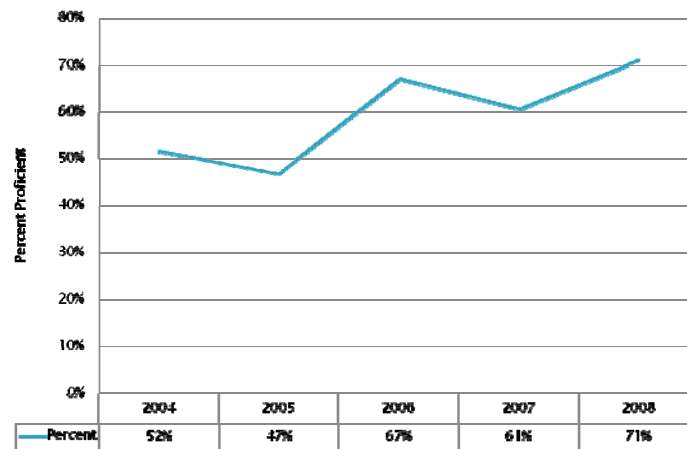
Track Class Results

Reading – 2008 CRT Proficiency

Track Class Results

Class 2013 (7th grade 2008) – Math

	Novice	Nearing Proficient	Proficient	Advanced
2005	29%	43%	29%	0%
2006	9%	45%	36%	9%
2007	10%	25%	60%	5%
2008	5%	23%	55%	18%

Track by Subgroup

Economically Disadvantaged Students

	Elementary	Junior High	High School	District
Reading	76%	71%	66%	71%
Math	68%	65%	33%	62%
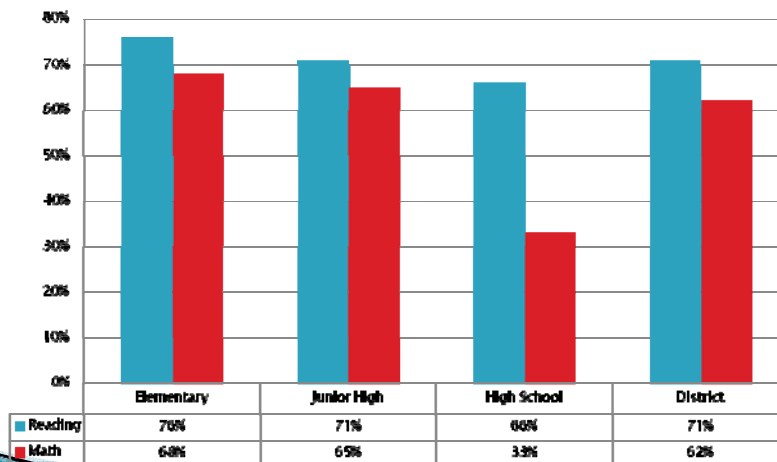
Track Individual Scores

Year	Grade	School Name	RD SS	RD PL	MA SS	MA PL	SC SS	SC PL
0607	07	Montana All Stars 7-8	272	P	236	NP	N/A	N/A
0708	08	Montana All Stars 7-8	279	P	254	P	232	NP

Track Results For Standards

Reading

		1	15	17	22	23	36	39	56	57	58	61	76	80		
		5D1	5C1	5B1	5B1	5D1	5B1	5C1	5A1	5A1	5B1	5A1	5C1	5C1		
Last Name	First Name															
Montana	University	+	+	+	+	C	+	+	C	+	+	+	+	+	299	A
State	Montana	+	+	D	A	C	+	+	B	C	+	+	+	+	288	P
State	Outa	C	B	C	C	B	D	+	B	D	D	C	A	D	216	N

Student Achievement

- Track overall scores of all students
  - Math, Reading, Science
- Track class results each year
- Track individual scores
- Track results for standards

Caution – Limiting Factors

- Number of questions per standard
- Number of released questions per standard
- Open response questions related to some standards, but not all
- Others

Resource Materials

- Released Items
  - Open response items
  - Multiple choice items
- Model answers
- Math vocabulary
- Scoring rubric
- Grade level learning expectations
- Performance Descriptors

Application of CRT Results

- Results by
  - Standards
  - By class
  - Sub group
  - Individual students
  - Specific Items
- Released items
  - Use in class
  - Model answers
  - Scoring rubric

Closing

- Questions
- Evaluation
- Renewal Units
- Thank You!

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